See *and* Hear..

BY

Will H. Hays

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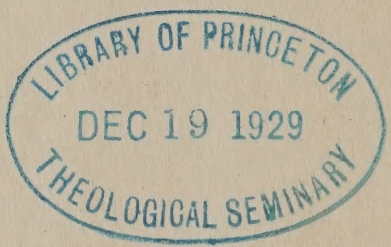

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SEE AND HEAR

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BY
WILL H. HAYS

President Motion Picture Producers and Distributors of America, Inc.

A BRIEF HISTORY OF MOTION PICTURES AND THE DEVELOPMENT OF SOUND

November, 1929

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The Genesis of the Motion Picture

Chapter I

ONE stands on a high mountain and sees long lines of men, women, and children moving slowly forward. They come from everywhere. They are rosy-cheeked girls from the farms, and their paler-faced sisters from the cities whose feet ache from long hours of standing behind bargain counters. There are plow boys, and sons of millionaires, and boys with the sallow cheeks of the tenements. There are old women with hands reddened and coarsened by work, and with eyes grown listless with long waiting. There are old men who hobble on crooked sticks, and children with the flash of the sun's gold in their hair and the happy laughter of innocence in their voices. There are the schoolboy, and the savant, and the man of no learning at all. There are men and women of every race and of every tongue, moving slowly forward, seeking something, seeking, searching, yearning—asking for a place to dream. All about them is the roar of the cities, the confused, jangling noises of life that is hurried, rushed, propelled forward at a breathless speed. Every minute of every hour of every day they come—millions of them. And over and above them, and in front of them,

attracting them on, offering that which they desire, are billions of flickering shadows—the motion picture. Who shall estimate its importance? Who shall attempt to say what it means to the world?

The motion picture is the epitome of civilization and the quintessence of what we mean by "America."

Those are bold, maybe challenging, words; but I believe that the motion picture's own story, its history and its proper achievements and anticipations are warrant enough.

Civilization may be said to be made up of four vital components: industry, science, art and religion. The motion picture will, upon examination, be found significantly to derive from and partake of the functions of all these.

Let us set it down immediately: the motion picture is a great social necessity, an integral part of human life in the whole civilized world. The thoughtful man can have no patience with those who would casually pigeonhole "the movies" with the ephemeral and passing whims that flutter through the current of amusements. We have had the motion picture now these three decades, developing and exploring its destiny through the ordeals of experience and demonstrating increasingly its fundamental values of service.

It is painfully true that not many, certainly not enough, people know the motion picture institution. A great many persons know the fame of screen personalities, a great many have marveled at the swift prosperity of the industry as evidenced in some spectacular careers, a vast public patronizes the screen for its products, but exceedingly few indeed, and some of them decidedly prejudiced, have given thought and research and study to the motion picture for itself in its broader aspects. That is natural enough. In parallel, most of us want to experience and enjoy health, but we are not on the whole vastly interested in physiology. But if we are to

realize what the motion picture is and endeavor to think about it intelligently, we must give some heed to its inner facts. No superficial judgment of the motion picture has ever proved correct. Excellent reasons can be found for even its most bizarre manifestations, if one can see the screen from a broad angle, broad enough to take in all the facts.

Civilization follows the tools. The motion picture is the newest, and maybe the best, tool or instrument of the art of expression—and expression is the all of art. By art, man lives the fullness of life. Art is his triumph and release from all limitations of time and place and every manner of awkward fact. Art gives him many lives by vicarious living.

No one can fairly draw the lines that bound art, science, industry and religion from each other. Our civilization is a blending of them all. The motion picture is at once their product and servant.

You can turn to the writings of the scholars and the exhibits of the museums and trace there the entire genealogy of the art and industry of the motion picture as a tool. You will find interesting evidence that the roots of the motion picture run back into the unrecorded beginnings of human consciousness.

It is a fascinating progression that has brought us the motion picture as the newest and best way of telling things, the most direct route alike to the emotions and the intelligence. It began with pantomime, with by-paths into the spoken word, and evolved into drawing, pictographs and alphabets and written language, with other by-paths into sculpture and painting, and with paralleling evolutions of dance and song and ritual and pageantry and lastly drama. Expression ramified into apparently divergent arts as tools developed. All this development was merely toward better ways of telling things, more effective drives into the consciousness of the

audience. The motion picture stands in direct line of descent and it is as definitely the offspring and descendant of the first primitive effort to re-create events for others by telling in word and gesture, as the motor car is the descendant of the first ox-cart that creaked over the Aryan plain.

There will be little space indeed to tell any such a complex story here, but an examination into the history of the motion picture will amaze one with the array of savants and priests, and preachers and painters and scientists and magicians who have vitally figured in its evolution.

Expression means making the other man feel what you feel, see what you see. That is all that any of the arts are for, whether the expression is in marble or paint or stage drama or printer's ink. Let us put it down that the motion picture is the new, and possibly final, instrument of doing it and doing it more perfectly than it was ever done before.

We have arrived at the motion picture just about as early as it was possible to evolve it as a new tool from the older tools developed ahead of it. It had to wait on mechanics, optics and chemistry. It came, as so many others of the great new necessities of the new life of our era came, on the wave of American invention, and like all other great inventions it has its debts to the centuries of European endeavor that have gone before.

And let me pause a moment to say here that there are special reasons perhaps why America should have given birth and prosperous nurture to the motion picture as a world art. America is in a very literal sense the world-state. All races, all creeds, all the manners of men that exist on the globe, are to be found here—working, sharing and developing side by side in a reasonable degree of understanding and friendship, more friendship among greater diversities of tribes and men than all the previous history of the world discloses. America's people do not speak of themselves primarily as

Germans, Englishmen, Greeks or Frenchman; as Catholics, Hebrews, Protestants, but as Americans. Ours is probably the least uniform of all nations, in the sense that France is French and Russia, Russian. But it is, at the same time, the greatest single unity among all nations, because America represents a harmony of diversified interests, all of which blend as do the pieces in an orchestra into one deep-toned symphony. Is it not possible that this very quality of harmonized diversities enabled America to express itself to the world by the creation and the development of the world's most universal method of expression—the motion picture? The nation required a method of universal expression. The motion picture is that method.

Thomas A. Edison's desire to give eyes to his phonograph is primarily responsible for the motion picture camera as we know it to-day, according to Terry Ramsaye, historian of the motion picture.[1] Edison was at work, toward the close of the last century, on numerous inventions, but most of his interest was centered on the talking machine with which he had startled the entire world a short time before. William Kennedy Laurie Dickson, a young Englishman, who had traveled thousands of miles in order to associate himself with the Wizard of Menlo Park, was working for Edison and mysterious "goings on" were to be noticed in Room Five of the plant at West Orange.

Conscious scientific endeavor, first as a study of the nature of appearances of motion, and later of the synthesis of appearances of motion, began with the studies of Peter Mark Roget, the same whose name appears on the classic and authoritative Roget's "Thesaurus," first aid to word mongers, who was in 1824 secretary of the Royal Society in Great Britain. After him came many experimenters, notably Joseph Antoine Ferdinand Plateau of Ghent,

[1] A Million and One Nights.

and Simon Ritter von Stampfer of Vienna, and later Lieutenant Baron Franz von Uchatius of Vienna and Emil Reynaud of France. While they studied motion, others, notably Louis Jacques Mande Daguerre and Sir John Herschel and others, pursued the chemistry which gave us photography.

Out of labors started by Roget's studies came a machine which finally became the familiar toy called Zoetrope, using hand-drawn pictures. Then, seemingly unrelated, came a method of recording motion photographically, evolved for Leland Stanford's race horse studies in California, by John D. Isaacs and operated by Eadweard Muybridge about 1880. Jean Louis Meissonier, famous French artist, applied the Isaacs-Muybridge pictures to the Uchatius projecting zoetrope and attained a crude limited sort of motion picture dependent on glass plates. It was only a tantalizing beginning.

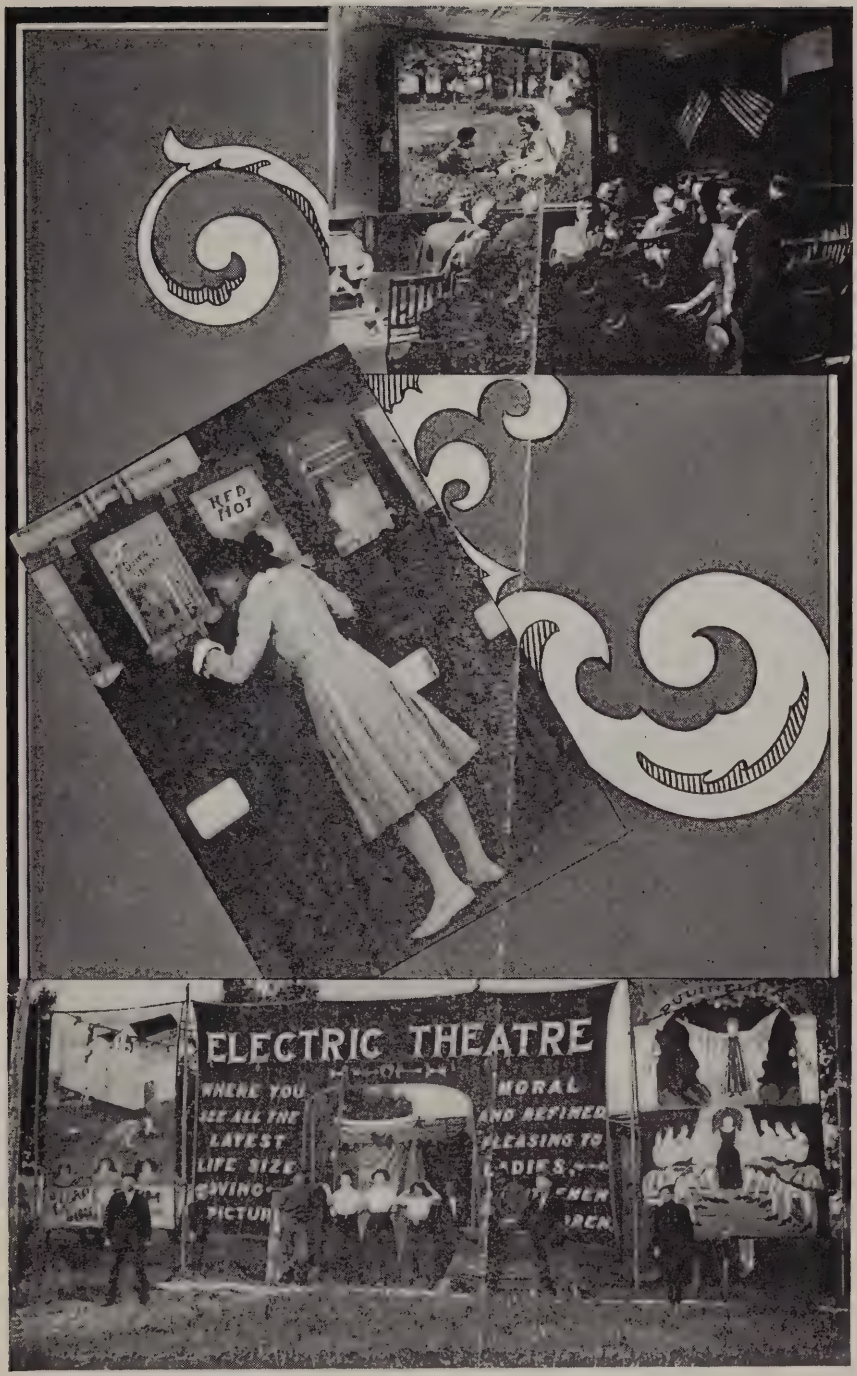
Edison abandoned all precedents when he set to work in 1887, and early in 1888 we find the first effort toward the modern motion picture being made in the Edison studios recording the antics of Fred Ott, a mechanic, as the first actor, on a cylinder like that of an old Edison phonograph.

Years later, Ott told of that first performance before a motion picture camera. Repeated by Terry Ramsaye, it is:

"I had a white cloth wound around me and then a little belt to tie it in around the waist so as not to make it too baggy. I looked like a balloon. After I was ready, I made a monkey of myself and the camera was turned."

Mr. Ramsaye speaks of the first picture as "The Follies of 1888." "It was a slapstick comedy staged in a solemn laboratory," he adds with a chuckle.

But the Edison cylinder picture machine, built in simulation of the phonograph, was no adequate solution of the problem. Edison decided he wanted to feed the photo-material into the camera, and the subsequent pictures into a



Photos by C. P. Cushing, from Ewing Galloway

Early moving picture days—(Upper) interior of a Nickelodeon; (Center) the peep-show; (lower) The Electric Theatre in the '90's.

viewing machine, on a belt, like cartridges into a machine gun. He was looking for a flexible material to carry the pictures.

Now up in Rochester, George Eastman, who had invented the kodak, had a similar problem for what he called "roller photography." Edison was trying strips of collodion varnish when he heard that Eastman had arrived at a perfected material—for the kodak. Edison sent Dickson to Rochester for a sample.

That first order for film for the motion picture is still in Eastman's files at Rochester. With it went a postal money order for $2.50 in payment for a strip one inch wide and about fifty feet long. That test strip worked.

Imagine the thrill of that occasion. George Eastman's product had met and fitted Thomas Edison's product. *The motion picture had come into being.* And out of their union was to come the new and great motion picture which has since flowered into the world's greatest single source of amusement.

Edison moved on rapidly now in his studio, which, because of its resemblance in color to a police patrol wagon, was known as *The Black Maria*. He was still thinking in terms of eyes for the phonograph. But the moving picture was developing of its own accord. Annie Oakley; Sandow, the strong man; Buffalo Bill; dancers in Hoyt's "Milk White Flag," which was a Broadway success in those days; Ruth St. Denis were being induced to lend their talents to the moving picture, being recorded in single rolls of film fifty feet long for use in peep show machines which were now to appear as a forerunner of the moving picture. The first of the peep shows was opened at 1155 Broadway, New York City, on April 14, 1894.

As the motion picture began to develop into something like regular form and use, the makers of pictures began to

consider ways and means of getting popular pictures—a formula on which they are still constantly engaged. They recognized very early that plenty of action was needed and as prize fighting offered action and at the same time had a popular appeal, they turned to the prize fights of the day for filming purposes. James J. Corbett, heavyweight champion of the world, appeared before the camera. He became the first motion picture actor under contract. Later "Gentleman Jim" came back to the moving pictures but many gallons of water had flowed under the bridge between his first and second entrances into motion pictures.

Carmencita, a dancer of current popularity, and Annabelle Moore, who was a reigning favorite in the music halls of New York in the last years of the nineteenth century, also found their way into the new world of make-believe that was to be found in the peep shows of the country. An industry began to show signs of existence.

The public, expressing itself as usual through business, demanded a screen machine, a device which would liberate the motion picture from the peep show. Mr. Edison was not enthusiastic about this, although he had done some research and might readily have solved the problems of projection at once. He had been experimentally projecting since 1889.

An Industry's Early Days

Chapter II.

Meanwhile a secret race to the screen was taking place. Probably the first to project, outside the Edison laboratories, was the late Major Woodville Latham, a hero of the Confederacy, from Virginia, who opened a flickering show at about 140 Broadway in May of 1895. Meanwhile in France, Louis and Auguste Lumière of Lyons, and Robert W. Paul of London achieved the screen, and in Washington, Thomas Armat brought forth a projector commercially shown in Atlanta in September, 1895. All of these machines were based on Edison's peep show Kinetoscope and used his films primarily.

Communication was slow then. When the showmen of New York began to demand a screen machine, the Edison agents, Raff & Gammon of New York, investigated Armat's invention, named it the Vitascope, and made a deal at West Orange to have it manufactured and offered as an Edison device—because the market looked to Edison, who was indeed the father of the motion picture.

The first showing was announced for April 20, 1896. The Vitascope was to be the last act on the variety, or vaudeville, program at Koster & Bial's Music Hall at Broadway and Thirty-fourth Street, New York. Delays, however, were to postpone the opening until the evening of April 23rd. The latter date is, therefore, recorded as the real birthday of the motion picture as a form of public entertainment.

It is a fine evening and the house is packed. Silk hats and evening clothes are plentiful. Some of the bloods of the town are here. Thomas Armat is at the projection machine. Thomas Edison sits quietly in a box, acclaimed by the crowd as he was to be acclaimed thirty years later when he modestly visited the opening the great Paramount Theatre, ten blocks north of Koster & Bial's, but now, as on that later occasion, he is silent.

At last the pictures are thrown upon a twenty-foot screen which has been set in a gilded frame. There is the finale of Hoyt's "Milk White Flag," a dash of a prize fight, Annabelle Moore—the dancer—waves rolling in on Manhattan Beach. Marvelous! gasps the audience. Bravo! shouts the gallery boys. As the waves roll in, the first-night audience —at least those in the front rows—jump from their seats and move back through the aisles to avoid being deluged, thus paying involuntary tribute to the reality of motion pictures. Sheepishly they return to their seats to applaud.

Praise! Words of congratulations! Excitement! Newspaper comment! Everybody is speaking of the Vitascope.

The moving picture had arrived. It was now a form of public amusement. Empty stores, holes in the wall, were soon to become alive with moving pictures. A good working machine was put on the market. The public was interested and intrigued. Traveling Vitascope showings aroused the country to eager interest in the new invention. Men, women, and children flocked to see pictures that moved. It was thrilling, exciting—something new under the sun. Farmers left their plows, farm wives their chores, to see Edison's new wonder. An interest was aroused that was to spread to the smallest hamlet, encircle the globe, enlist more people than any other instrument of entertainment the world ever knew.

And with the increased interest came a demand for more

films. From far and wide came the call. People would gladly pay to see moving pictures, but they soon tired of seeing the same pictures over and over again. Novelty in pictures was needed. Thus from the first began the ceaseless struggle for variety of pictures—a struggle which explains why to-day there are 800 feature pictures annually.

The first picture makers had been able to induce some of the Broadway stars and some of the athletic heroes of the country, notably the prize fighters, to appear before the camera. In exchange for their services the stars got splendid advertisement. To-day it is with some justification said that stars demand and receive salaries commensurate with their services to the amusement-loving world.

About this time in the film's history, New York was being treated with what the citizens of that day regarded as a racy comedy called "The Widow Jones," in which Miss May Irwin and John C. Rice exchanged a kiss of almost modern prolongation. The moving picture producers of the day saw the advantages of the kiss on the screen and Miss Irwin and Mr. Rice agreed to reproduce it for the camera. It became an instant success under the rather obvious title of "The May Irwin-John C. Rice Kiss." It was forty feet long and it brought down on the heads of the infant industry several resounding raps. In spite of its popular appeal, a great many people disapproved of osculation to the extent of forty feet and to this day no one has ever definitely determined how many feet long a kiss may be and still remain a proper salutation.

Soon now vaudeville turned eager eyes upon the Vitascope and B. F. Keith houses began to announce it as an added attraction. Newspapers differed in their estimates of its possibilities, but shortly after the Vitascope's first appearance in Boston, *The Boston Herald* took occasion to predict a future. "May not small towns see city shows by the Vita-

scope?" *The Herald* asked. "May not actresses, who realize how fleeting youth is, preserve themselves in their prime? Indeed to what uses may not the Vitascope be put?" To which *The Boston Traveler* added, "Who knows how the new invention and those that are to follow may revolutionize the amusement world . . . Who knows that each country will not have its stage 'foundries,' so to speak, for each of the various forms of dramatic and musical art? Here finely drilled companies could give performances to be perpetuated by the Vitascope and the phonograph, or by their successors. Duplicates of the records could be sent by flying machines broadcast over the world and London's new play or latest sensational dance could be enjoyed in every quarter of the globe within a few days of the initial presentation."

Did they speak with prophetic tongues?

Busy days followed the introduction of the Vitascope. Bitter days, too. Patent wars were pending and all along the line new activities were to be noticed. The Vitascope had begun to have importance. Men were beginning to see money ahead. It was an open game, as Terry Ramsaye says, and anybody might become important over night. Every man who came in contact with the screen might call it his own. Some heartbreaks, perhaps many injustices, were to be endured before the industry became conscious of itself, of its importance, of its responsibilities and opportunities. But these internal wrangles need not all be told here. They provide a thrilling chapter for the industry, but after all, all industries pass through such periods of unrest and instability. In a great war men die, they are maimed, blinded, diseased. Mothers are bereft of sons, wives of husbands, children of fathers. And yet in the golden sun of victory, these things as lamentable as they are, must be judged in accordance with the great purpose, the ultimate end. In transoceanic flying we see brave young men—and fine young women too—sink

to their deaths in the stormy waters. We are grieved; and yet for the future safety of travel, for the greater comfort of those who follow, we persist. These things have to be. It is the story of life itself. And so in the motion picture we find in those last days of the nineteenth century strife and warfare, and not always the most desirable and admirable of methods. But these things we accept now—and with the shaking of a head, pass on, because that past is no more.

We pass on to—the beginning of the motion picture's consciousness of itself as an art. The filming of "The Passion Play" is the first notable move. Now follow such meager attempts at story telling as the filming of "The Life of an American Fireman" by Edwin S. Porter, then an Edison cameraman—a subject, by the way, which was utilized for the screen again in the year 1927, under the more fitting title of "The Fire Brigade." But seven and a half years were to pass from the night the first Vitascope was displayed at Koster & Bial's before a real motion picture with a real plot was to be produced.

"The Great Train Robbery," in which Mr. Porter built upon his technique in "The Life of an American Fireman," is generally regarded as the screen's first effort to tell a story in pictures. It was made by the Edison studios in 1903. Edison was fathering the evolution of the art from the seed of his peep show pictures.

"The Great Train Robbery" was a world-wide sensation. It gave rise to a great development in making pictures with stories. Showmen took to the road with it in black tents and made converts to the motion picture entertainment all over the world. It was followed by "The Great Bank Robbery," by "Raffles—The Amateur Cracksman," and by "Trapped by Bloodhounds, or a Lynching at Cripple Creek."

"The Great Train Robbery" also, by chance, gave the

screen world its first star—Max Aronson, known presently as G. M. Anderson and later as Broncho Billy. From his day on, the star has been in the ascendant. The motion picture public demands its favorites and whatever can be said for or against the system, the public, as final arbiter, decides the issue.

On April 2, 1902, the first motion picture theater announced its entrance into the world. The Electric Theatre, 262 South Main Street, Los Angeles, told the citizens of that city, which later was to become the motion picture capital of the world, that for the price of ten cents it would be glad to provide an hour's amusement in "a vaudeville of moving pictures" including "Capture of the Biddle Brothers" and "New York in a Blizzard." Business was so good on the opening night that matinées started the next day. In less than twenty-five years, there were to be more than 20,000 motion picture theatres in this country.

"The Electric" was the project of Thomas L. Tally of Los Angeles, the showman who many and many a year later was to figure again in screen history as one of the founders of First National Exhibitor's Circuit, now the world famous First National Pictures, Inc.

There were other tentative beginnings of a screen theater. So far, the career of the motion picture had been as a component of the bills of the variety theaters which were becoming more elegantly "vaudeville." One of the earlier theaters was opened in 1903 in Newcastle, Pa., by the Warner Brothers, due subsequently to figure conspicuously in the motion picture story.

Meanwhile the peep show motion picture continued to flourish in the penny arcades, of the sort that linger still in the congested regions of the greater cities. These arcades, trivial as they seemed, were to prove mighty agencies of the future, drawing to the picture a personnel that was one day

Photos by C. P. Cushing, from Ewing Galloway

Two studio scenes in the early days of motion pictures.

to dominate the industry. Adolph Zukor, Marcus Loew, and William Fox are among those who made such inconspicuous entries into the world of the films. Mr. Zukor, now president of Paramount Famous Lasky Corporation, carries on to-day. Mr. Loew, whose untimely death in the summer of 1927 deprived the industry of one of its most cherished leaders, was the head of Loew's Incorporated, which included Metro-Goldwyn-Mayer, makers of "The Big Parade," "Ben Hur" and other notable pictures. William Fox is president of Fox Film Corporation, producer of many screen masterpieces.

While these men were serving their novitiate as purveyors of entertainment to the public in the movie slot machine peep shows, a mighty transition was impending.

Thanksgiving week in 1905, Harry Davis, then a real estate operator in Pittsburgh, decided to put a movie projector, a piano and some film into a vacant storeroom, along with ninety-nine seats, and see what he could do as a showman, with a five-cent admission. The show was "The Great Train Robbery." The experiment was a world-shaking success. The admissions poured through as fast as the one-reel show could be ground out. The East caught fire with the idea and five-cent motion picture theaters swept the country. Every week saw hundreds of new "nickelodeons" opened. By 1907 there were five thousand of them, all new customers for motion pictures, and making for the pictures a new public. Among the newcomers on this wave was Carl Laemmle, now president of Universal Pictures Corporation and a leader in the industry. He opened the White Front Theater on Milwaukee Avenue in Chicago's West Side and there employed a bright messenger boy by the name of Sam Katz to play the piano. Mr. Katz is now the head of the far-flung Publix Theaters.

The coming of this new market put an extraordinary

strain on the capacities of the producing machine of the motion picture industry of the day. The industry had been torn with internal wars and patent fights in the courts since 1896, the year the screen was born on Broadway.

But now studios had to be built and a stable organization set up. Hit-and-run methods would not serve.

In 1906 both the American Mutoscope and Biograph Company and the Edison interests, major opponents in the patent struggles, set up large studios to supplant their rooftop plants and backyard production methods.

In 1907, D. W. Griffith, a Kentuckian, a bit of an author and a good deal of an actor, ventured about seeking to sell some "suggestions" for motion pictures. They were really scenarios, but the word had not been invented yet, at least not for motion pictures. Presently he was employed by the Biograph Company and walked through that old brownstone door at 11 East Fourteenth Street in New York which was to be the golden gate to fame also for Mack Sennett, who was to evolve a whole separate art of production in motion picture comedy, just as Griffith slightly before him set about laying down the foundation of the real dramatic art of screen narration. That was in 1908.

The motion picture, warring, needed peace. Biograph, in the artistic ascendancy due to Griffith, was about to go to the wall in the commercial and patent war. Then a practical peace for business' sake came in the truce that took form as the Motion Picture Patents Company, formed December 18, 1908, which pooled the patents and licensed every picture maker in America. In his analysis of this complex and trying period, Terry Ramsaye credits this labor largely to George Kleine, then the largest distributor of motion pictures in the world, and to Jeremiah J. Kennedy, a consulting engineer and business expert from downtown New York, who became the chieftain of the organization. Dis-

cipline came into the industry for a time and it prospered as never before.

Only a few months later, in 1909, a certain little girl, legally one Gladys Smith, an actress in stock and with one Belasco engagement to her credit, went looking for summer work at the Biograph studio. She told the clerk at the inqury desk that she was "Mary Pickford," her newly-acquired stage name.

Not long ago, a theater in New York put on a special revival of one of Mary Pickford's first pictures—a picture called "The New York Hat." It was crude and quite funny to the sophisticated audience. How they laughed! Back in 1909, it was a startling success. A little, unknown girl in California had written it. Her name was Anita Loos. The story was that of a poor girl who wanted an Easter bonnet, a desire shared by countless of her sisters. A kindly preacher, knowing of her longing and of the hard life she led, sent the hat to her. The gossips in the village—Mae Marsh was one of them—complained. They did not understand and Mary's father said he would force the minister to marry her. That was what the minister wished to do all along as it turned out. The fashionable 1927 audience chuckled, and by their chuckling, they praised the progress that has been made.

It was the kind of picture Mary Pickford was to make famous—the Cinderella story. "Little Mary," as she was known, became a national sensation. To-day Miss Pickford, one of the very few survivors of that pristine period of the screen, continues a vital and important personality of the screen, and to a degree that few outside of the industry know, one of its highly capable executives.

Following Mary Pickford's appearance, a long list of notables came—John Bunny, one of the first of the comedians; Bobby Harron; Mabel Normand; Henry Walthall; James

Kirkwood. At first the actors from the spoken stage did not like the idea of appearing in moving pictures. They considered pictures degrading and vulgar. But the movies were attracting many actors from the stage and they were developing stars of their own. Mae Marsh, Norma Talmadge were being heard from. The names of J. Warren Kerrigan and of Maurice Costello were becoming known. Mack Sennett was getting ready to produce his famous comedies, the first of which appeared in 1912. While Sennett continues to produce comedies, other great names are associated with comedies too, in a list of which are those of Al and Charles H. Christie, who have achieved distinction in this important field.

About this time, Adolph Zukor got the idea of "famous players in famous plays." He secured the American rights to "Queen Elizabeth," in which Sarah Bernhardt played, and from then on the influx of stars was equal to the demand.

Sketching rapidly these eventful years—the names of Lillian and Dorothy Gish begin to appear. Wallace Reid, Clara Kimball Young, Francis X. Bushman, Beverly Bayne, Blanche Sweet are rising stars of the day. The motion picture had now advanced far since that showing at Koster & Bial's. It was time for a new sensation and the new sensation came in 1913 when George Kleine imported "Quo Vadis," which ran for twenty-two weeks on Broadway. The motion picture had arrived definitely as major entertainment. The whole world was interested. And only two years were to elapse until D. W. Griffith's "The Birth of a Nation" opened for a run which was unparalleled until recently. That was March 3, 1915. The picture was shown at the Liberty Theatre at $2.00 top price and, with its appearance, it may be said that the screen had caught up with its older brother, the stage. Before long, Broadway was to be filled with motion picture theaters.

Meanwhile Jesse Lasky, who had already won fame in the world of vaudeville as a producer and executive of first rank, and Cecil B. De Mille, author of many plays and librettos for the stage, had rented a barn in Hollywood, California, and gone to work making motion pictures. The day of making pictures in New York was nearing its sundown. The great West with its salubrious climate, its sunshine, water, mountains, deserts and plains, was beckoning to the movie. To-day we find production centered in California. The explanation is a simple one.

California had everything the motion picture director needed. It was made, apparently, for his uses. And so we have the unusual example of an industry, the production of which is centered in California and the distribution and financing of which are centered in New York, three thousand miles away. This has both advantages and disadvantages. Not only are the natural advantages of each place utilized but the viewpoint of East and West can be better analyzed and turned to use.

"Came the day" soon of the serial in 1913-1914. "What Happened to Mary?" was revealed in countless reels. "The Adventures of Kathlyn" were duly recorded. "Dolly of the Dailies" became a national favorite. We suffered with "The Perils of Pauline" and we puzzled our brows to fathom the "Million Dollar Mystery." Pearl White, Marguerite Snow, Kathlyn Williams, James Cruze were followed every week by an interested public. And so it has been through all the industry's history.

The news reels, too, had come as a definite contribution to the screen. For a long time, as far back as the inauguration of President William McKinley in 1897, in fact, events of historical importance were recorded on motion picture film, but it was not until the inauguration of President Woodrow Wilson that the news reel became a daily enterprise like the

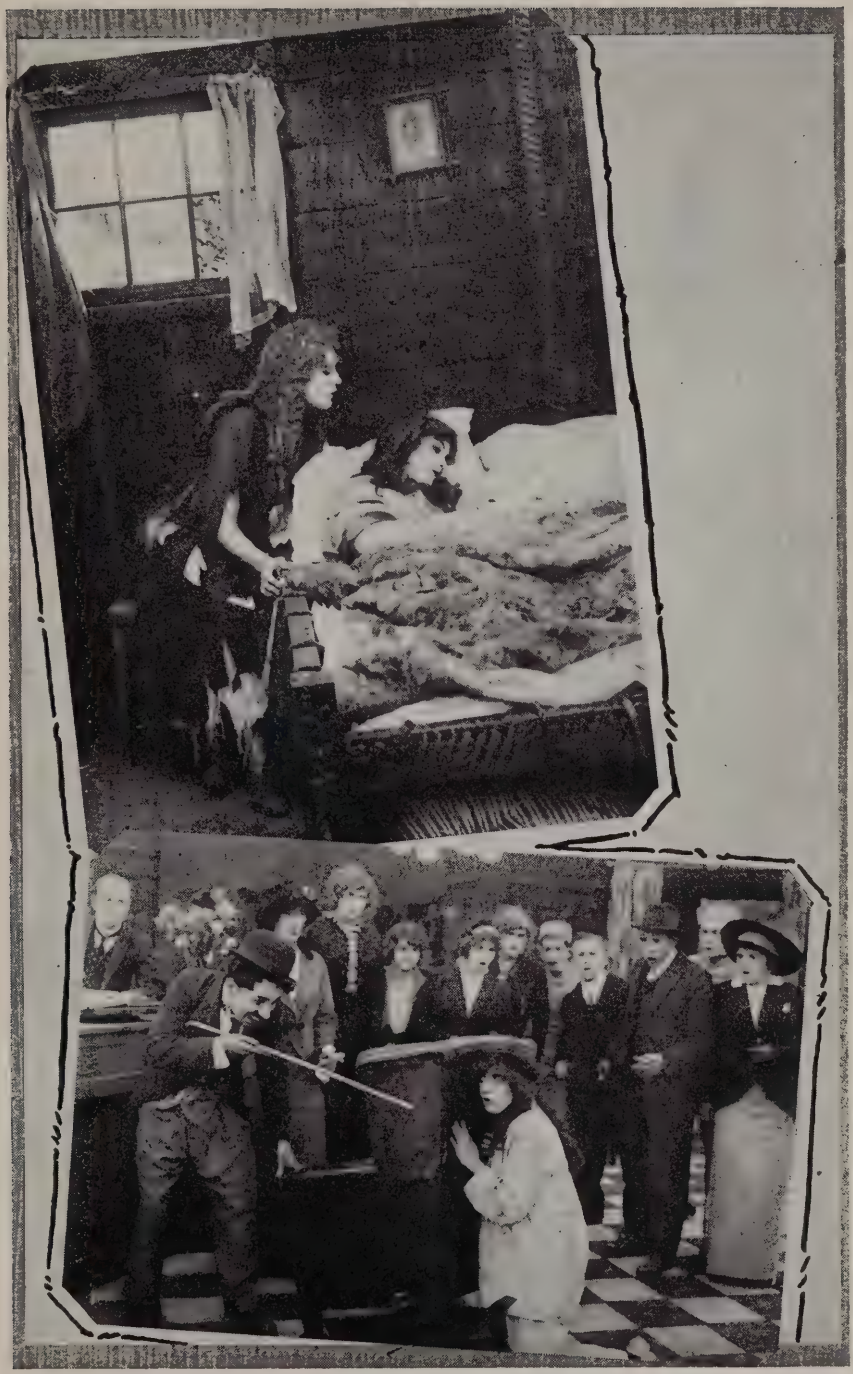
newspaper. To-day we find half a dozen great news reel agencies at work with cameramen in every part of the earth constantly focusing their lenses on every important happening in every land. They witness the pageantries and the tragedies of nations, show the customs and pursuits of all people, holding up a mirror, as it were, to every phase of human activity with vividness and accuracy.

But, stepping back to catch the thread and flow of development, the motion picture, with its world-wide distribution and its eighteen or nineteen thousand nickelodeons in the United States and Canada, had not yet reached its full status. It was still a "nickelodeon" business.

Adolph Zukor with his long feature pictures of "famous players in famous plays" was still fighting an uphill battle to find a home for the bigger product with the bigger idea. The old, established interests were holding to the nickelodeon idea and inertia was against the militant opponent of the new conception of the films and their function.

But on April 14, 1914, the Strand Theatre opened on Broadway in New York, a theater on a par with the pretentiousness of speaking stage houses, devoted exclusively to the motion picture. The opening picture was a nine-reel version of "The Spoilers" from Rex Beach's novel, produced by William Selig, a member of the Patents Company group who was leaning to the new bigger picture idea. The Strand was under the direction of Samuel Lionel Rothafel, the man whom the world was in years to come to know as "Roxy," one of the great showmen of the era. The Strand was the manifestation of a new idea which was to triumph. The Nickelodeon type theatre lingers only here and there as a fossil survival like the occasional arcades, and the United States has approximately 20,250 screen theaters, and the world total of them is approximately 50,000.

It would be interesting to relate many movements of the



Upper: Mary Pickford in a scene from "Tess of the Storm Country."
Lower: An early Mack Sennett comedy with Charles Chaplin and Mabel Normand.

busy, crowded years of this period. There is a fascinating flow of events in the manner in which W. W. Hodkinson and Herman Wobber brought over to the new order the best that had been evolved from their experience as pioneers, especially as that service was applied to the distribution of the big new feature dramas of Adolph Zukor, Jesse Lasky, Hobart Bosworth and other producers of the big new feature dramas for Paramount distribution; how J. D. Williams, returning from experience in Australia, brought the infection of that great commonwealth's enthusiasm for the art; how Edwin S. Porter, maker of "The Great Train Robbery," went over to the feature idea with Famous Players, bearing with him the connecting link with the vast technical lore of the original Edison organization. I would like to tell you the amazing stories of the late William Rock of Vitagraph and his associates, all famous pioneers, and of Sigmund Lubin and of the rise of Stanley Mastbaum, and the exciting careers of Richard Rowland, Robert H. Cochrane, Nicholas and Joseph Schenck, Hal Roach and others. They have labored well and achieved much. And I would like, too, to tell you of Pathé Exchange's pioneering in the news reel and of First National Pictures, Inc., being formed by exhibitors and of Earle Hammons and the Educational Pictures, Inc., but these must be left to more leisurely written histories, as must be the entrance of Joseph P. Kennedy into the industry.

I would like to speak of William S. Hart's rise as a great Western star and hero of boys of all lands, and of Tom Mix, of like fame; of the first efforts of Douglas Fairbanks, great artist, idol of boys, who has brought romance and the light of happiness within the reach of countless listless folk until they, too, share in the glamor of a new existence; of Hugo Riesenfeld and the development of music in the motion picture theater; of Jackie Coogan and the child actors; of the

World War and the part the motion picture industry played in it. I would like to talk about Cecil B. De Mille's "The King of Kings"—the potentiality of which cannot be estimated—about De Mille himself, master craftsman, who has dared to go ahead, blazing his own trail with mammoth productions of far-reaching consequence. But I must move on with the sweeping tide that brings the motion picture industry to an appreciation of its importance and of its opportunities.

Organization of an Industry

Chapter III.

Slowly, very slowly, the industry was growing into the consciousness of its own responsibility. The first years of the industry's development were of necessity chaotic. When keen men saw the commercial possibilities in it, they set out in feverish haste on the world-old quest for gold just as the Forty-niners did when word of the discovery came from Sutter's Hill in California. There was competition of the fiercest sort and for that matter there still is. There can be no monopoly of brains, the keystone of picture production. Competition is essential to progress. But the ethics of the competition have evolved. They have mounted constantly. The old careless, helter-skelter days are over. The chieftains of the motion picture now realize their responsibilities as custodians of not only one of the greatest industries in the world but of possibly the most potent instrument in the world for moral influence and education, and certainly one of the most universal mediums of artistic expression. They realize that never before has there existed any means by which the genius of a people could be so swiftly and dramatically presented to all other people and they govern themselves accordingly.

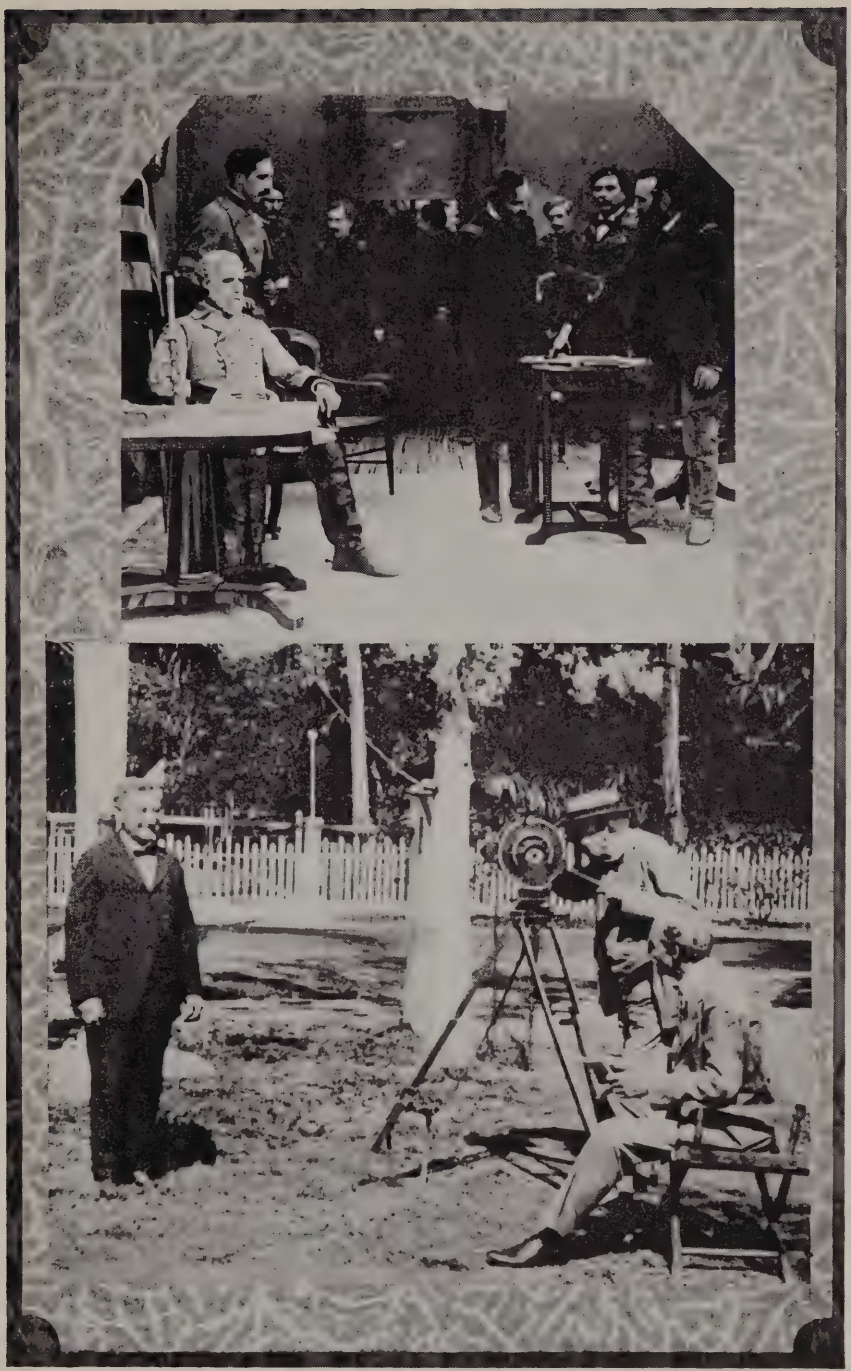
From a business standpoint, the motion picture industry has settled down and is operating along the sound, common sense lines which govern other American industries.

In the latter months of 1921, a growing consciousness of responsibility—recognition of the motion picture as something greater than a casual entertainment for the masses—began to reveal itself. The industry committed itself to an active policy of betterment. Leaders in the industry met and considered what steps to take. The result was an association of producers and distributors known as The Motion Picture Producers and Distributors of America, Inc.

The purposes of that association were chiefly "to foster the common interests of those engaged in the motion picture industry by establishing and maintaining the highest possible moral and artistic standards of motion picture production, by developing the educational as well as the entertainment value and the general usefulness of the motion picture, and by reforming abuses relative to the industry."

These purposes were not to be simply a gentleman's agreement. They were and are legal purposes of a legally organized body. Nine companies were represented at the organization of the Association. To-day twenty-four companies are transcribing those ideals into performances. Those companies are: Bray Productions, Inc., The Caddo Co., Inc., Cecil B. De Mille Pictures Corporation, Christie Film Company, Eastman Kodak Company, Educational Film Exchanges, Inc., Electrical Research Products, Inc., First National Pictures, Inc., Fox Film Corporation, D. W. Griffith, Inc., Inspiration Pictures, Inc., Kinogram Publishing Corporation, Metro-Goldwyn-Mayer Distributing Corporation, Paramount Famous Lasky Corporation, Pathé Exchange, Inc., Principal Pictures Corporation, RCA Photophone, Inc., RKO Distributing Corp., Hal Roach Studios, Inc., Sono-Art Productions, Inc., United Artists Corporation, Universal Pictures Corporation, Vitagraph, Inc., Warner Brothers Pictures, Inc.

Associated with the Motion Picture Producers and Dis-



Upper—A scene from "The Birth of a Nation," D. W. Griffith's production.

Lower.—Thomas A. Edison turned the crank again on Fred Ott, first movie star. The onlooker is Henry Ford.

tributors of America is the Association of Motion Picture Producers of California, an organization designed to set into practice the ideals of responsibility and discharge of duty which actuate every branch of the organized and alert motion picture industry of to-day.

The industry had by now passed beyond the state of an entertainment force only. The screen was being used in many directions. It had become an aid to the educator, an ally of the scientist, the servant of clergymen, the friend of industries. How were these other agencies experimenting with the motion picture to get the best results from the screen? We found isolated instances of schools using pictures to help the teacher. We found a few scientific films in use. Churches were ready to show religious pictures if they could get the ones they wanted. Industries were beginning to understand that in addition to showing our clothes, office equipment, machinery, automobiles, furniture, architecture to all parts of the world, films could perform certain useful things for industry at home. Motion pictures could teach employees better methods of operation, more skillful use of tools, better ways of living, safety methods. To all these legitimate demands the association turned its attention.

To recite the activities undertaken by the Motion Picture Producers and Distributors of America would almost require the time of their accomplishment. Obviously the first needs were to insure proper entertainment, to insure proper support for the worth-while pictures, and to lend assistance wherever it was needed in making the motion picture a greater servant of the world.

The first move was to make sure of the improvement in the wholesomeness of the entertainment. The motion picture theater is a community meeting house. There gather the families—fathers, mothers, and children. Motion picture success is based largely upon its ability to please the en-

tire family and the success that has come to the industry, the real affection with which it is regarded by the millions, is genuine proof that the industry is succeeding in that effort.

Many persons have asked, "Why haven't we seen in the movie many of those recent books and plays that deal in themes and situations and topics which in previous years were discussed only in whispers"? The industry was determined that this type of book and play should not become the prevalent type of motion picture and to prevent this, set up *The Formula*, which operates as follows:

When any member company of the Motion Picture Producers and Distributors of America is offered the screen rights to a book or play which that member believes is objectionable, the Association is so notified. If the judgment of the member company is confirmed, the author is advised. He may present to the Association his reasons why the story shall not be rejected; if it is finally decided that the story is unsuitable then the author and all the member companies of the Association are notified.

After a story has been rejected the author may prepare a new story with the unsuitable material removed and with a new title which does not in any way suggest the old title. He may use the proper dramatic incidents and interest making certain only of the elimination of the unsuitable material. Then the author may submit such a new story to the producing companies for picturization, as in the original instance, with the distinct understanding that the film shall not be publicized or advertised in any way that will connect the new story with the old and that it shall not be presented in any way that will mislead theatregoers. If this is not done, then the company members, thus having their attention directed to the subject in question, have the opportunity of avoiding the mistake which the picturization of the novel or play would be.

The method, which is of course thoroughly legal and which has proved efficient, is not censorship in any sense of the word. No censorship could have brought about the results which have been attained. At the same time, the formula does not, by any possible interpretation, limit the production of vital or artistic pictures. Any method which did that would fail absolutely.

To insure support for the better type of pictures, the industry invited great national citizen organizations with millions of members interested in social service, education, religion, civics, to associate themselves with the organized industry in bringing about the results desired. The result was an organization which was unique—a Public Relations Committee. Among the sixty or more organizations represented on the committee were: National Society of the Sons of the American Revolution, National Education Assn., Federal Council of Churches of Christ in America, the International Committee of the Y.M.C.A., Boy Scouts of America, Girl Scouts of America, The American Legion, American Federation of Labor, the National Community Center Asso., Camp Fire Girls, the American Sunday School Union, Chautauqua Institute, Daughters of the American Revolution, National Board of the Y.W.C.A., International Federation of Catholic Alumnae, Russell Sage Foundation, Central Conference of American Rabbis, Associated Advertising Clubs of the World, National Catholic Welfare Conference, American Library Association, et cetera.

The committee had its own officers, a paid secretary, and a smaller executive committee. For nearly three years the Committee was a functioning body. Under its inspiration great interest was aroused throughout the country in supporting the best pictures. Children's performances, known as The Saturday Morning Movies, developed and prospered. In its own office, the Motion Picture Producers and Dis-

tributors of America, in co-operation with the Public Relations Group, selected fifty-two complete programs of pictures of special interest to children. They were shown in many theaters throughout the country on Saturday mornings with a standard admission price of ten cents. When the programs became outmoded, they were withdrawn but the movement continued. Now in many cities and towns special Saturday morning performances are given under the auspices of interested public groups who co-operate with the exhibitors, the pictures being selected from the current output of the studios.

In the spring of 1925, the Public Relations Committee, finding the work it had sponsored had become a permanent and actual part of the organized industry, asked that the committee be dissolved and a Department of Public Relations be established within the association. This was done. A small active committee remained and the advice and assistance of the larger group are still gladly received. The policy of the new department became immediately that of "The Open Door." This meant that every individual and every organization wherever located was cordially invited to bring constructive advice and suggestions to the industry. The response has been most gratifying and out of the co-operation have come splendid advancements in many lines.

In 1926, a Department of Industrial and Public Relations was opened in Hollywood in an effort to make sure that the working conditions of motion picture employees was kept the best in the world and to develop still further the material used in the pictures and its treatment. A Studio Committee was organized, with a representative from every studio responsible for what goes into pictures. In advance of production expert advice is asked, from our State Department, from ambassadors from foreign countries, from church

groups, education officials, civic leaders, and others whose opinions can be accepted as authentic.

One very concrete example of how the Open Door has helped is to be found in the establishment in Hollywood of an institution that is unique in business—a *free* casting bureau for extra people. The free casting bureau is operated, without cost to the employees, by the producing companies and there are registered eighteen thousand persons who are qualified to work as extras. Some are qualified because they have a wooden leg, others because they possess a fine growth of whiskers, some because they look like Italians or Germans or French, some because they own dress suits and can wear them in a distinguished manner, some because they own horses and can ride them.

These extras work from day to day. Each day's work is a job; 330,397 jobs were given in one year—an average daily placement of 905 at an average wage of $8.59—all without cost to the employee. Their total wages for the year was $2,838,136.30.

Of the average daily placement last year of 905, the number of men per day was 603, of women per day 269, and of children per day 33.

These figures are a blow to the beautiful girls who believe that Hollywood is longing for their art, and for mothers who think their children would add distinction to the movies. An average of only twelve children a day is employed through the casting bureau. These children when at work are under the care of teachers assigned by the Los Angeles Board of Education and paid by the producers. No children may act in the movies unless they are well up in their school work. School hours are maintained in the studio.

In its desire to increase the general usefulness of motion pictures, the industry is cooperating with a church committee in the use of pictures in religious education. After sev-

eral years of intensive work with great educators, several companies are preparing teaching films for use in classrooms. This method of education will have an enormous effect for good upon the teaching methods of schools and colleges.

Pictures are being shown to immigrants. The films give the newcomers a concrete idea of the country to which they are coming and outline ways and means by which they can become good citizens. Films have been sent to leper colonies in the Canal Zone and in the Philippines and to Eskimos in Alaska. Entertainment is furnished gratis to thousands of "shut-ins" in prisons, hospitals, orphanages and homes.

One of our companies in co-operation with the American College of Surgeons has just completed the first two of a series of pictures for use in clinics and hospitals. Pictures will be made of surgical operations, performed by the masters, in colors, in slow motion or magnified so that the details of the most intricate operations can be studied by surgeons in all parts of the world over and over again until they will be able to duplicate the work of the masters.

In the matter of commercial arbitration, the industry has shown its progressiveness. Disputes arising over contractual relations are necessarily inevitable in an industry of this sort where millions of contractual relations obtain for the showing of hundreds of thousands of pictures. Delays, one thing or another, may bring disagreements. The natural inclination is to rush into court. Pictures can't be tied up by courts. Time is too precious. And so the industry has adopted the arbitration system. In the key cities, there are arbitration boards, each composed of three exhibitors and three distributors.

In the last five years, the arbitration boards have disposed of 73,652 cases involving $17,724,380.82. Only a

negligible few cases were litigated after submission to arbitration.

The motion picture, more than any other medium of expression in our modern life, has been hampered and beset by efforts of thoughtless persons to place legal restrictions on its out put. These people have not realized that the integrity of motion pictures must be protected just as the integrity of our churches is protected and that the quality of pictures must be developed just as the quality of our schools is developed.

Motion pictures are not dead things to be regulated like commodities such as freight and food. They are evidences of human thought; and human thought, on which progress depends, cannot be tampered with safely. The tendency to censor, however, remains a mark of our times. The passion on the part of a small minority for regulating and directing other people to their will has become almost a national pastime. The industry's own not unnatural irresponsibilities during its formative years, contributed to the agitation. More recently the very real and personal interest in motion pictures as a means of entertainment and education has made films so much a part of everyday life that some people have appropriated to themselves the right of criticism. Changing conditions, the influx of new ideas and standards, the breaking down of conventions in other relations of life, reaction from the laxity incident to such a world upheaval as this generation knew, submission to governmental orders in stress of war, all added to the prevailing tendency.

So threatening indeed was the political invasion shortly after the termination of the World War, that thoughtful men and women in and out of the industry saw that continued aggression would ultimately mean that there could be no physical distribution of motion pictures in America. The industry, hampered by conflicting laws, would have been forced out of business.

Seven states, by the close of the war, had passed laws providing for censorship of motion pictures—Pennsylvania, Ohio, Florida, New York, Kansas, Maryland and Virginia. Then, after 1921, there began a reaction against censorship based upon the proved ability of the industry to govern itself and the added knowledge by legislators that the people themselves did not want censorship. Three of the seven states—Kansas, Pennsylvania and New York—have recently repealed that part of the law affecting news reels and educational subjects. In thirteen states which considered censorship laws in one year, the measures were overwhelmingly defeated by public opinion.

The only time the people of a state have had the chance to express their opinion, they voted "no." That was in the State of Massachusetts where the censorship of motion pictures was put directly to the people in 1922. The citizens of that state defeated the proposed censorship 553,173 to 208,252—a majority of 344,921 against censorship.

Motion pictures remain the most typical of American productions. Standing well among the first ten industries in this country, the motion picture industry stands first probably in the percentage of the world's supply of a single commodity. These figures issued not long ago by the Department of Commerce at Washington are surprising:

	Per Cent.
Of the world's land, United States possess.....	6
Of the world's population, our people make up..	7
Of the world's wheat, we grow.....	27
Of the world's coal we dig.....	40
Of the world's telephones, we use.....	63
Of the world's corn, we grow.....	75
Of the world's automobiles, we make more than..	80
OF THE WORLD'S MOTION PICTURES, WE PRODUCE MORE THAN	85

Two hundred and fifty-five thousand persons are permanently employed in the industry in this country and more than $125,000,000 is spent annually in production. Last year, 823 feature pictures and several times that number of short subjects, news reels and travelogues were produced. It is estimated that approximately one hundred million Americans go to the movies weekly. Our pictures are shown in seventy countries with titles translated into thirty-seven tongues. Last year, we exported 235,585,000 feet of film and every day approximately twenty-five thousand miles of motion pictures are handled, examined, stored, and shipped by employees in the exchanges of members of the Motion Pictures Producers and Distributors of America.

The future of the industry one hesitates to predict. So great has been the advancement in the narrow scope of thirty-three years that to attempt to estimate the future appears futile. One can see only expansion, development, progress. The motion picture will not only retain its present popularity but will of course add immeasurably to it. It will add also to the list of beneficial services which it already is performing. Producers are taking the best men available into the studios and they are teaching them methods of production which cannot help but result in a steady flow of finer and finer pictures. Universities and colleges throughout the country are teaching motion picture technology and appreciation. All of literature, all of modern writing, provides a wealth of story material. New mechanical developments are coming every day. Theatres are marvels of comfort and beauty. And the producers and custodians of the motion picture in every branch of the industry are aware of the responsibility upon their shoulders.

Thoughtful people are agreeing with our persistent contention that the motion picture is one of the greatest forces yet given to man to bring a happier understanding not only

between men but also between nations. And herein lies what I confidently believe is one of the greatest future possibilities of the motion picture. The motion picture knows no barriers of distance nor of speech. It is the one universal language. All men, wherever they may live, can find on the screen a story they can understand. If we can only have understanding, we shall not only be peaceful and kindly among ourselves, but we shall remain at peace with all nations. When we understand, we do not hate and when we do not hate, we do not make war.

To promote this international understanding by sympathetically telling the story of the nationals of every country to the nationals of all others is the determined purpose of our Association.

The great need of the future, of course, is manpower. The motion picture business is built largely upon personnel. Take away the directors, actors, writers and nothing is left but a highly organized production, distribution and exhibition machine with nothing to keep it running.

The greatest difficulty in progress has been in those phases of art in which it has been necessary to develop the talent completely. And there has been the most significant development. It is as if in thirty years from the time man first began to construct buildings, the Woolworth Building was erected; as if thirty years after the invention of the violin we had produced Kreisler, Kubelik and Mischa Elman.

In the late months have come forward so many fine directors, skilled writers and talented actors that the motion picture is producing at least once a week a story that compares favorably with the best in art, in the drama and in literature.

It is merely a question of finding men and women who have the talent necessary to make always the very best. Motion picture producers are trying to employ only the directors and writers who have that ability. They are doing their

Upper—Interior of the Roxy—a Fox theatre.
Center—Paramount Theatre.
Lower—The Capitol, home of Metro-Goldwyn-Mayer pictures.
All three modern theatres in New York.

utmost to develop them. Directing and scenario writing are two great professions that are a part of this and no other enterprise. Applications by the thousands come from persons who want to write scenarios or direct pictures. In most cases they are persons who are not qualified to pass even the first test. The result will be a mass movement upward. Men and women will come to the industry already prepared in the fundamentals of the business they are to follow and inspired to give their time and their talents to this great new art.

Recognition of the motion picture as an art by the great universities marks the beginning of a new day in motion picture work. It paves the ways for the motion picture's Shakespeares.

I wish it were possible here to draw aside the curtains of the future and to peer at what is to come, for the future, I have no fear, will be great.

William Kennedy Laurie Dickson, Edison's early laboratory assistant, far back in 1896 forecast the future of the motion picture.

"It is the crown and flower of the nineteenth century magic," he said, "the crystallization of eons of groping enchantments. In its wholesome, sunny, and accessible laws are possibilities undreamt of by the occult love of the East: the conservative wisdom of Egypt, the jealous erudition of Babylon, the guarded mysteries of Delphic and Eleusinian shrines. It is the earnest of the coming age, when the great potentialities of life shall no longer be in the keeping of cloister and college, of money bag, but shall overflow to the nethermost portions of the earth at the command of the humblest heir of the divine intelligence."

I agree with Terry Ramsaye when he says, "Will Hays himself could say no more, to-day."

The Coming of Sound

Chapter IV

The rapid and amazing adaptation of sound to motion picture entertainment since the fall of 1926 has led to the entirely erroneous belief that talking pictures are something new under the sun, when, as a matter of fact, the development of sound was certainly corallary with, and some say, was even the forerunner of the moving picture.

We know that Thomas A. Edison was looking for eyes for his phonograph when he produced what turned out to be the first marketable motion picture machine. And there is much evidence to prove that scientists here and abroad were engaged more than fifty years ago in making photographs of sound. There was, for instance, a Doctor Czermak, of Vienna, who, in 1862 succeeded in photographing the vocal chords in action although he did not, it is true, attempt to record the sound vibrations; and there was a Professor Eli Whitney Blake, of Brown University, who sixteen years later is reputed to have made pictures of the vibrations of a microphone diaphragm by means of a mirror which cast a light on a photographic plate.

Instances of other experiments, similar to the many which resulted in the invention of a commercially possible moving picture, were from time to time recorded, leading up to the time of Professor Demeny's "Chronophotophone" in 1892,

about which very little is known, and to the time of Edison's "Kinetoscope" in 1894 which, however crudely it was done, certainly synchronized sound with pictures. Like the peep-show pictures, the Kinetoscope was a one-man device, ear tubes being used to catch the sound. Public demonstrations were held at Raff and Gammon's amusement parlors at 1199 Broadway but the demand for the first "talkie" was so slight that the device was soon withdrawn.

In the years that immediately followed the withdrawal of the Kinetoscope, scientists continued their investigations. They worked quietly, as is the way of science, out of the public's eye, being, for the most part, content to wait until they had learned the essential facts about recording sound before making known their discoveries. When they did speak they were able to speak of a commercially successful article; they were ready to turn out an almost finished product. That is why sound has come into universal use with such amazing rapidity. It was delivered on a silver platter in 1926 and the industry had only to adapt itself to its use. To me the most interesting phase in the whole development has been the ease with which the producing companies and the theatres have adjusted themselves to so revolutionary an addition.

It is, of course, not within the scope of an article of this nature to go into the claims of various inventors as to their share in the development of talking pictures. Much has been said recently about men like Eugene Augustin Lauste, formerly an employe of Mr. Edison, and about his early experiments with talking pictures. Unquestionably the work of many men has gone into the perfection of the present talking devices. Almost every great invention is the result of the combined efforts of scientists. There can be in these pages, therefore, no attempt to place final responsibility. Such a matter is for the inventors, the patents office, and

the users of sound to decide. It is sufficient to say that there is evidence that Lauste, about 1907, was demonstrating a sound and film device in London. He did not meet with great success apparently and was never able to market his product for any widespread use. In an interview printed in The New York World, Mr. Lauste attributed his failure to the breaking up of his company during the war. Most of his stockholders were Germans, and the necessary capital for future developments was not forthcoming.

Carl Laemmle, president of Universal Pictures Corporation, tells an interesting story of his early experiments with sound. Twenty years ago he imported from Germany a device which he advertised as the "greatest improvement in the moving picture." The name of the instrument was Synchroscope and the first exhibition was in Chicago for the benefit of exhibitors and representatives of the press. Confidentially Mr. Laemmle explained that "the craze for talking pictures will be even greater than the present craze for ordinary moving pictures."

There were others who rather more than half-believed the Universal Company's president. *Billboard,* for instance, in an editorial at the time asked: "Is the moving picture business about to be revolutionized? Has the time arrived when vaudeville houses can put on a whole bill by machinery? . . . "I was fairly stunned the other day," said the *Billboard* writer, "when I witnessed a performance that was so startlingly realistic that I don't hesitate to say the questions already are answered in the affirmative."

For a time the Synchroscope was highly successful. Many exhibitors put in their orders and deliveries were accelerated. Other exhibitors who did not order the talking device made up for the deficit by engaging singers, and the day of the song-slides came into popularity. Still others attempted to make their own sound accompaniment through off-stage noises.

Upper—A scene from Cecil B. DeMille's "The King of Kings," a Pathe picture.
Lower—On the Universal sound stage—showing the sound crane used in producing "Broadway."

At last the Synchroscope failed and was withdrawn. The difficulty was that there were not enough sound-films to meet the market's demand. The supply was exhausted. Another reason for failure was that the phonograph records which were used were capable of holding material for only two reels while the theatres were demanding four and five reels.

About 1908, Edison again turned his attention to the talking picture, this time with a device known as the Cameraphone which coupled a phonograph with a film projector by means of a wire belt. Making a Cameraphone picture was very simple. A phonograph record was selected and then the recording artist was photographed until the synchronization was at least passable. Of course the synchronization was not perfect. Today it would be instantly rejected but in those days close-ups had not come into popular use. Nobody had thought of throwing the head and face on a full screen and lip-movement was not regarded as important. Proponents of the Cameraphone argued with some justification that perfect synchronization was not imperative.

For a short time the Cameraphone flourished. It was admittedly a novelty, however, and while the world is always interested in novelties, it soon tires of them. The Cameraphone ceased to be popular, and since improvements were not forthcoming, the device vanished from the market until 1913 when Mr. Edison again launched a talking device.

An interesting story is told of the premiere of the Cameraphone, or the Kinetophone as it had come to be known. It was on a Monday afternoon, February 17, 1913, that three men set out to judge the audience reaction to Edison's newest invention. Those men were: Mr. Edison, John J. Murdock, and Martin Beck. Four theatres had been chosen for the experiments—the Colonial, the Fifth Avenue, Union

Square and the Alhambra. On the program of each of those theatres was the announcement: "Thomas A. Edison presents his latest and greatest invention, talking motion pictures, or the Kinetophone."

The *New York Times* reviewed the events which led up to that afternoon's experiment. Mr. Edison had perfected his invention on his shops at Orange, N. J., and had tried out the results on a small theatre adjoining his studio. A scene from Shakespeare's Julius Caesar was photographed with sound. Then there was a short lecture explaining the device, concluding with the breaking of a china dish. A violinist, a singer, and a pianist were on the program, and the whole was concluded with the barking of a dog.

A review of the showing in the papers of the day reveals the following interesting comment: "For the present at least the prophecy that the 'talkies' soon will supplant grand opera or the legitimate drama seems to be fantastical. It was stated that soon well-known players of the legitimate stage will be seen and heard in the 'talkies.' Then no doubt the invention will give greater pleasure to critical audiences."

The reviewer's comment was, for the time being at any rate, accurate. The Cameraphone did not become a sensation. Exhibitors shied away from it and within a short time it was withdrawn from the market. Not until 1921 was there another definite attempt to reach the public with talking pictures.

In that year D. W. Griffith, always a pioneering spirit, showed his picture "Dream Street" at the Town Hall in New York City with a sound accompaniment. The device he used was known as the Photokinema and the dialogue consumed about 200 feet of film. It was an interesting experiment and many of the leading figures in the industry were in the Town Hall for the showing. Griffith was

warmly applauded for his efforts but the general belief was that talking pictures were still far off in the future.

Another name appears in the early history of sound—the name of Dr. Lee DeForest. Dr. DeForest in 1907 is said to have perfected a vacuum amplifying tube. About 1923 reports became current about the Phonofilm. Since then law suits have developed relative to patent rights, and those suits are still pending. Whatever the outcome may be, the name of Dr. DeForest is an interesting and important one in connection with the history of talking pictures.

The Modern Talking Picture

Chapter V

So far we have traced, however sketchily, the history of sound. Now we come to the great new volume in the history of motion pictures which is the record of the commercial development of talking pictures as we know them today. Here we enter into an entirely new phase of the motion pictures. Henceforth let no one make the mistake of regarding sound simply as an embellishment. Sound today is far more important than an effect. The talking picture is, in itself, a distinctive art-form.

In order to understand fully how and why talking pictures developed as quickly as they did, it is necessary first to review the motion picture situation as it existed early in 1926, at a time when motion pictures had reached what appeared to be a peak in popularity. One hundred million of our people each week were patronizing the 20,000 motion picture theatres; the studios in Hollywood, in an effective endeavor to meet the demands of the market for 800 feature pictures a year, were operating at their maximum capacity. Competition had never been keener. Every company was vying with every other company to attract the ablest writers, and the most efficient technicians. Hundreds of thousands of dollars were being spent on new effects, while an insatiable public demanded always something new.

In the larger cities competition had become so keen that the theatres, forced to fill their seats, inaugurated a system

of stage presentations which for a time threatened to relegate the picture to a position of secondary importanace. One elaborate revue after another was cast as bait before the public. Overhead costs mounted as a consequence, while the margin of profit showed slight tendency to increase. A physician looking at the industry would have been forced to report that, while the patient was fundamentally sound and healthy, he was suffering from local disorders of a decidedly uncomfortable nature.

It was into such a situation then, that sound was destined to project itself. Sound came at the opportune moment. The field was fallow. Early in 1926 engineers, who had been quietly and persistently studying the application of sound to moving pictures, began to hint that they had at last progressed far enough in their experiments to warrant the belief that commercially successful talking pictures could be produced and marketed. The producers themselves were the first to hear such reports: but the producers, with few exceptions, received the sound proposals, if not with indifference, at least with incredulity. They were not over-cautious, but in the past they had been the victims of glittering reports of sound. They chose wisely to wait for developments. The engineers, however, were insistent.

For five years—that is, since 1921—they had been studying the use of sound with pictures, hoping to devise ways and means of applying what they had learned about the transmission of sound via the telephone, the radio, and the phonograph to the development of a special technique relating to talking pictures. The problem was not primarily one of synchronizing sound and moving pictures. That was a mechanical problem which could readily be solved. Their real problem was to produce *satisfactory qualities of sound in adequate volume.* By applying the identical principles which they had used in successfully transmitting the voice

over great distances on the telephone, the engineers succeeded in recording and amplifying sound in conjunction with motion pictures.

As so often happens, several groups of scientists, each working independently of the other, began their experiments at about the same time. One group consisted of the engineers of the Bell Telephone Laboratories; another group consisted of engineers of the General Electric Company. The findings of both groups reached the present perfection approximately at the same time, but since the devices emanating from the Bell Laboratories, jointly owned by the American Telephone and Telegraph Company and Western Electric, were given to the public first, it will serve our purpose here to consider that development initially.

The Bell Laboratories development was carried forward on two major lines: firstly, the recording of sound on disc records operating in synchronism with the film; and, secondly, the recording of sound on the edge of the film itself by means of a photo-electric cell.

As I have indicated, when the news of the new sound device reached the industry, there was a definite tendency to leave sound alone. To one man, however, sound with pictures made an instant appeal. That man was Sam Warner, one of the four Warner brothers who had been producing pictures for a number of years. Sam Warner liked mechanical devices. He was an early radio enthusiast, and it was not difficult to induce him to visit the Bell Laboratories for a sight of the new talking device. Mr. Warner saw and appreciated the talking device. He wanted it. He wanted it badly, and immediately he planned to interest in the device his three brothers—Harry Warner, Major Albert Warner, and Jack Warner. Harry Warner, president of the company, shook his head. He knew pathetic stories about men who had dabbled in sound. But by persistence Sam Warner

succeeded at last in getting his brother's consent to attend a demonstration.

That demonstration was destined to make a revolutionary change in the motion picture industry for Harry Warner, like his brother Sam, saw and was convinced. He was ready to throw the entire resources of his company behind the untried talking device, to stake everything, including his future, on one high throw. The great success which has come to his company is attributable to the courage which Harry Warner displayed on that occasion.

The immediate result of the two demonstrations—one for Sam Warner and one for Harry Warner—was that, in April, 1926, the Western Electric Company licensed Warner Brothers to produce talking pictures under its system and patents. The Warners elected to use the disc-method and the name they chose for their device was the Vitaphone. The first experiments were made in the old Vitagraph Studio in Flatbush, Brooklyn.

At that time Warner Brothers were completing the new John Barrymore picture called *Don Juan*. The production represented a large investment. Convinced that the success of the Vitaphone depended largely on its proper introduction to the public, the Warners decided to make the Barrymore film their first Vitaphone picture, and to show it at the only theatre in the world equipped for the Vitaphone—their own theatre at Broadway and 52nd Street, New York City. The New York Philharmonic Orchestra, under the direction of Henry Hadley, was engaged to make the synchronized musical accompaniment of the picture.

It was about this time that Harry Warner telephoned me to tell me of his plans. He had decided to offer half a dozen Vitaphone short subjects as a prelude to the feature picture and he wanted me to speak from the screen on behalf of the industry. I consented, of course, and a few days later

I accompanied Mr. Warner and other officials of his company to the Manhattan Opera House where I stood in front of a microphone and camera and said my piece—with gestures.

Because it was the first speech ever recorded for talking pictures, I shall herewith repeat the words I spoke that day:

"No story ever written for the screen is as dramatic as the story of the screen itself.

"Tonight marks another step in that story.

"Far indeed have we advanced from that few seconds of the shadow of a serpentine dancer thirty years ago when the motion picture was born—to this, the first public demonstration of the Vitaphone which synchronizes the reproduction of sound with the reproduction of action.

"And farther and farther ahead is the future of pictures, as far-flung as all the tomorrows, rendering greater and still greater service as the chief amusement of the majority of all our people and the sole amusement of millions and millions, exercising an immeasurable influence as a living, breathing thing on the ideas and ideals, the customs and costumes, the hopes and the ambitions of countless men, women and children.

"In the presentation of these pictures, music plays an invaluable part. Too, the motion picture is a most potent factor in the development of a national appreciation of good music. Now that service will be extended as the Vitaphone shall carry symphony orchestrations to the town halls of the hamlets.

"It has been said that the art of the musician is ephemeral, that he creates but for the moment. Now, neither the artist nor his art will ever die.

"Long experimentation and research by the Western Electric and the Bell Laboratories, supplemented by the efforts of Warner Brothers, have made this great new

instrument possible, and to them and to all who have contributed to this achievement I offer my congratulations and best wishes.

"To the Warner Brothers, to whom is due credit for this great premiere, marking the beginning of a new era in music and motion pictures, I offer my felicitations and sincerest appreciation.

"It is an occasion with which the public and the motion picture industry are equally gratified.

"It is another great service—and 'Service is the supreme commitment of life.' "

A few sultry summer weeks then passed and in the meanwhile New York City was being made acquainted with the new and mysterious name, Vitaphone. The newspapers carried display advertisements; billboards were inundated with the title. A skeptical industry looked on with interest, and with doubt. Then on the evening of August 6, 1926, the Vitaphone had its premiere.

There were many distinguished persons in the audience at the Warner Theatre that night. It was more than a usual first-night gathering. It was an occasion. Promptly at the appointed hour the curtains parted and I saw myself on the screen. I heard my own voice speaking the same words I had spoken in the studio weeks before. In the darkness I said to myself, "A new miracle has been wrought and I have had a part in it."

In addition to the feature picture and my introductory speech Martinelli and Marion Talley sang. Mischa Elman and Zimbalist played their violins. Anna Case, assisted by a famous dancing team and by the Metropolitan Opera chorus, offered a Spanish song. The entire first half of the program was sensational; the second half was more than sensational. It was reassuring. The next day the newspapers commented favorably, some of them enthusiastically. The industry was

interested but it was not completely convinced. Synchronized music—yes; singing—maybe; talking pictures—well, that was not likely. It was an interesting experiment, a more than ordinarily fine novelty, a great improvement over anything attempted in sound before; but for general use—well, very few people could believe it. The theatres were not equipped. It would cost money—too much money; it would revolutionize the business. The gamble was too great.

The four Warner brothers, however, were certain in their own minds that pictures with sound had come to stay. They had a faith that would not be shaken. They proceeded to synchronize other pictures with music, to make short subjects with operatic and Broadway stars. They proposed to equip other theatres as fast as they could.

By heroic efforts one hundred theatres were equipped for talking pictures within six months. Then the Warners learned with a shock that the cost of equipment was much greater than they had anticipated. They found it necessary to form a financing corporation which would buy the equipment from Western Electric and sell it on deferred payments to the theatres. Their investment in sound increased. They were in it to the limit of their resources.

Several months hobbled by and then the Warners made another epochal picture. It was called *The Jazz Singer* and Al Jolson was the star. In it Jolson, one of the most popular musical comedy stars of the times not only sang but actually *spoke* from the screen. The opening was set for the evening of October 6, 1927—a little more than a year after the first Vitaphone picture had been shown. All plans were completed. Then occurred one of those inexplicable tragedies with which life is filled.

During the last week in September Sam Warner complained of not feeling well. He had a bad cold. It was not of any great consequence, he thought, but when the time

The late Sam Warner whose early interest in talking pictures led to the development of Vitaphone by Warner Brothers' Pictures, Inc.

came for him and his brothers, Jack and Albert, to leave for New York for the premiere of *The Jazz Singer*, he decided not to go. Jack went alone. Albert stayed with Sam. Two days later Sam Warner went to the hospital. A sinus was infected. Quickly the poison flowed through his body. A surgeon operated. Jack Warner turned around and started home immediately. Harry Warner forgot the premiere and caught a train for Hollywood. Across the continent the two brothers raced with death. At first the news which met them at every station was reassuring. Then there was a relapse. Harry Warner, two days behind Jack, left the train and engaged an aeroplane. He reached Los Angeles on the morning of October 5. His brother had been dead for three hours.

Fiction writers and playwrights have always been fond of the theme which says that "the show must go on" though the players are sick at heart. By an odd coincidence Jolson's picture, *The Jazz Singer,* was based on that very theme. It was the theme of another Warner picture, *The Singing Fool.* The show had to go on. Plans for the premiere were continued. On the success of the Jolson picture rested largely the future of sound. Yet the man who had first seized upon the idea of sound pictures lay dead, and his three brothers who had backed his faith, were in Hollywood with his body. But the show went on. The premiere was a startling success. Within a few weeks the picture was to be a sensation. It attracted more people to the theatre than almost any other picture ever produced.

The Jazz Singer marked the beginning of a great rush to sound. The industry which had been waiting for assurance of the practicability of sound was at length convinced. The turning point had been reached. Today we reckon the evening of October 6, 1927, as the beginning of a new phase in motion pictures. From that evening on sound became the imperative element in production.

In the meanwhile, William Fox, president of the Fox Film Corporation, had been working with Theodore W. Case, of the Case Laboratories, and with Earl I. Sponable, another young inventor, in the development of a talking system which used the sound-on-film method. For fifteen years, ever since he was a student at Yale University, Theodore Case had been experimenting with sound-on-film. In 1916, then a chemical student at Cornell, Earl Sponable joined forces with Case. Their problem was to find substances which were extremely sensitive to light.

The war came on and the young experimenters put aside their work, devoting their entire time to development of infra-red light rays which could be used in signalling ships. As a result of their efforts, many convoys en route to France, were kept in line. After the cessation of fighting, the young inventors returned to Auburn, N. Y., and resumed their experiments with sound-on-film. 1922 they had perfected a light bulb called an AEO light which was so sensitive to sound vibrations that lines of sound could be photographed on the film.

It was not until the Spring of 1926, however, that Mr. Case and Mr. Sponable presented their discoveries to William Fox. They had waited until they were sure of themselves and of the practicability of their idea. Mr. Fox immediately saw the great possibilities of sound. He agreed to finance further experiments. No time was lost. In June, 1926, experiments were continued under Mr. Fox's sponsorship and two months later the Fox Case Corporation had been organized. Courtland Smith, who had been with me in the Post Office Department and who was secretary of Motion Picture Producers and Distributors of America, was made head of the new organization. A new plant was opened at Tenth Avenue and 54th Street and the name chosen for the new device was *Movietone.*

The Fox-Case Company at first turned its attention to development of talking newsreels, in which it was proposed to record sound as well as the action of current news events. Its second consideration was the production of Movietone short subjects.

The first public showing of Fox Movietone subjects was set for the evening of January 21, 1927, in connection with the premiere of the Fox feature film, "What Price Glory?" That was at the Sam H. Harris Theatre and the Movietone consisted of songs by Raquel Meller, the Spanish singer who had made an astounding success in this country a few months before and who was already a great star throughout Europe. Not until May 25 was an all-Movietone program ready for public exhibition. On that night the Fox Company presented "Seventh Heaven," a silent-film synchronized with music. The preliminary program consisted of Movietone shorts. Raquel Meller again was shown and Charles (Chic) Sales was seen and heard in a short comedy sketch called "They're Coming After Me." Ben Bernie's orchestra played, Gertrude Lawrence sang a song she had introduced with great success in the first Charlot's Revue. The preliminary program was concluded with a newsreel which was designed to be historic in the industry. That was the take-off of Colonel Charles A. Lindbergh on his New York to Paris flight.

Audiences in New York heard the whir and roar of the aeroplane's motor, listened to the shouts of farewell, to the gasps of the onlookers as plane hesitated, skipped, and then leaped from the ground into the air. It is history now how the world went mad about Lindbergh. Millions of people wanted to see him. They wanted to hear as well as to see his take-off. The Movietone record was a sensation.

By September, 1927, the first Fox feature picture had been synchronized before its Broadway showing. That pic-

ture was "Sunrise," and by the week of October 28, the first all-Movietone newsreel was shown at the Roxy Theatre. Six weeks later the Movietone News was a weekly feature. Exhibitors sought the newsreels as quickly as their houses were wired.

New developments came swiftly in the first months of 1928. Courtland Smith's organizing ability was being felt everywhere. His was a tremendous job of pioneering but with the ardent support of Mr. Fox and other colleagues he strode rapidly ahead. Experiments had already proved that the complete sound equipment could be transported in one and one-half ton trucks and a whole fleet of such trucks was ordered. The first all-talking comedy, known as "The Family Picnic," was presented to the public.

Since it was already obvious that sound pictures would sweep the country, Fox-Case decided to issue two instead of one Movietone News each week. A few months later the number was increased to three a week and only a short while before this writing it was found necessary to issue four newsreels a week.

Mr. Fox has frequently said that he was led to take part in the development of talking pictures not simply because he saw commercial possibilities in them but because he believed they would be a benefit to mankind. Especially is he interested in the educational possibilities of the talking screen, and it is not surprising that he developed the invaluable plan of bringing the great personalities of the world before the camera. The first crowned monarch ever thus to appear on the screen was King Alfonso XIII of Spain. Others followed rapidly. King George V of England, the Prince of Wales, Premier Benito Mussolini, Marshal Foch, President von Hindenburg, President Hainish of Austria, Raymond Poincare, the Crown Prince of Sweden, David Lloyd George, and Ramsay MacDonald are to be found

among the notable governmental officials who have spoken from the screen. Then there have been others like George Bernard Shaw, the great dramatist, who has refused persistently to visit America, Dr. Hugo Eckener, Sir Arthur Conan Doyle. All of these men have had messages for America and for the world. They have been brought into close touch with our people. A spirit of friendship has been created.

At the same time many of America's leaders have spoken from the screen, among them President Hoover, former President Coolidge, General John J. Pershing, Chief Justice William Howard Taft, former Governor Alfred E. Smith, Colonel Lindbergh, and Thomas A. Edison. This entire purpose of William Fox in bringing the world's personalities to the world's peoples has been a very real contribution to the world's welfare.

The Recording of Sound Pictures

Chapter VI

We must again retrace our steps to that time when the Bell Laboratories authorized their scientists to study the application of sound to motion pictures. We find another group of engineers, with the same end in view, at work under the direction of General Electric Company.

The first product of the General Electric Company laboratories was known as the Pallophotophone. It was the conception of Dr. C. A. Hoxie and the development of the trained experts in the General Electric's laboratories in Schenectady. The Pallophotophone is a sound-on-film device and one of its distinguishing characteristics is the powerful auditorium public speakers or amplifiers of the cone type which were invented by Dr. C. W. Hewlett.

For about six years study was devoted to the Pallophotophone before the public was allowed to see and hear the results. In the early part of 1927 a series of short subjects was produced and exhibited in a Schenectady theatre. So marked was their success that Radio Corporation of America became interested in the device. The name of the instrument was changed to the Photophone and a corporation known as RCA Photophone was organized, with headquarters at 411 Fifth Avenue. There a series of exhibitions was arranged and many of the important executives of the industry as well as many exhibitors came in 1928 to see and hear the Photophone.

Toward the end of 1927, Paramount Famous Lasky completed a great epic-picture of the air called "Wings." It gave a wide public demonstration to the RCA-General Electric device. Studios meanwhile had been opened and other pictures were synchronized. The development of equipment was continued in the laboratories and manufacturing plants of the Radio Corporation of America, the General Electric Company, and the Westinghouse Electric and Manufacturing Company.

The success of *The Jazz Singer* was the signal for all the producing companies to enter the sound field. Additional licenses were granted by Electrical Research Products, Inc., on behalf of the Western Electric Company, to Paramount Famous Lasky; Metro-Goldwyn-Mayer; United Artists; First National Pictures; Universal Pictures; Metropolitan Sound Studios; Hal Roach Studios; the Victor Talking Machine Company; and more recently to Columbia Pictures and to Sono-Art Productions. Among the companies licensed under the RCA Photophone system of recording are Pathé Exchange, Radio Pictures, Educational Film Exchanges, Pathé Sound News, Tiffany-Stahl, Mack Sennett and others. By the fall of 1929 more than five thousand theatres in this country possessed sound equipment.

Almost over-night sound had ceased to be merely a novelty. It was no longer a development for the future. It was with us alive, present. "When, how, and for how much can I get equipment?" the theatre owners began wiring to ask. "How soon can sound stages and producing equipment be in place?" the production heads wanted to know. Sound, sound, sound! That was the whole cry. What followed is now history. Skepticism died in the thundering approval of the public. Those who waited would be likely to watch the procession pass by. The bandwagon had come along and as many as possible were climbing aboard. Although less than

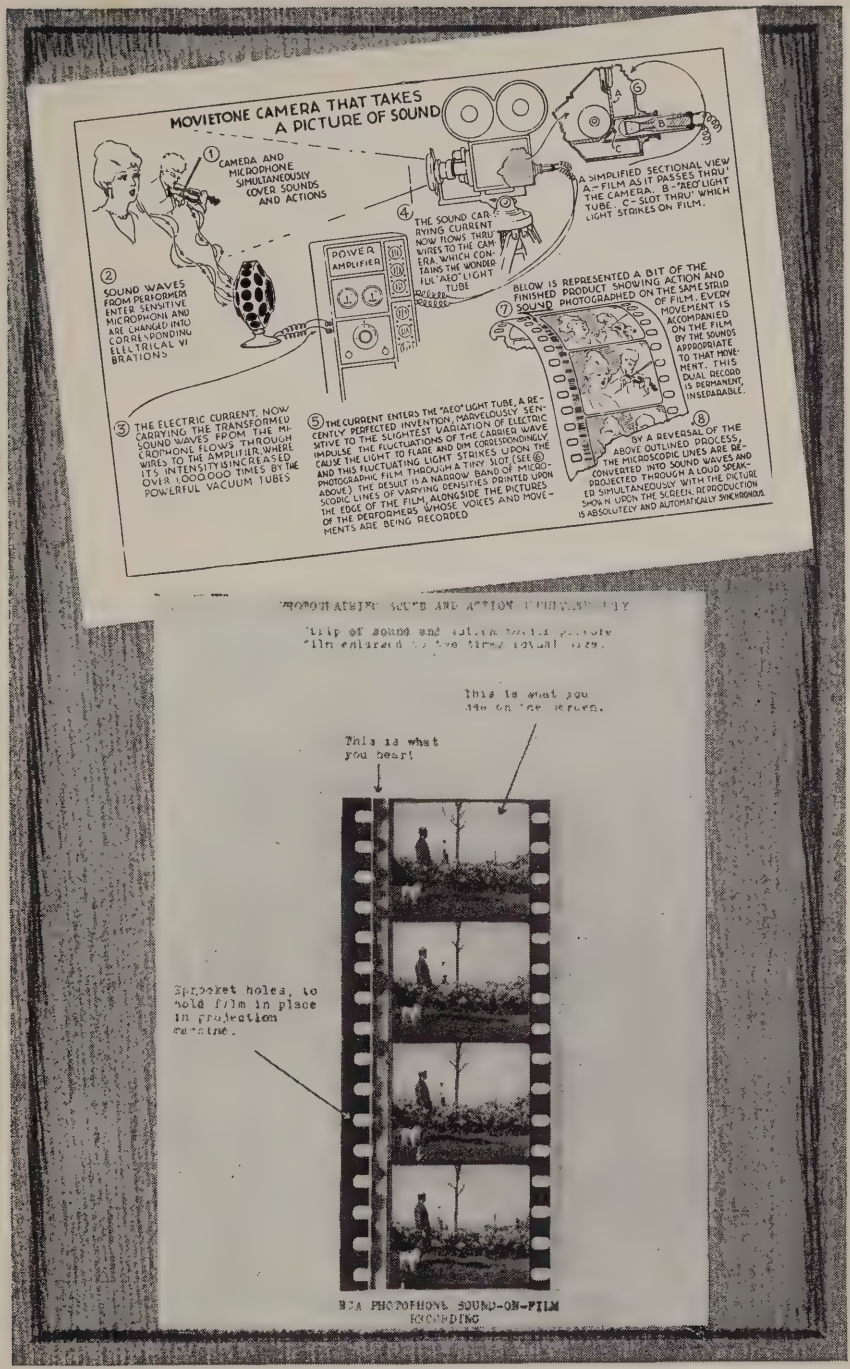
two years have passed as this is written, sound has become a major part of motion pictures. The balance has turned in favor of dialogue. Several thousand theatres have been equipped for reproducing sound. Every studio has its sound devices for recording. A new technique in writing and acting has developed. Changes have come with lightning-like rapidity. Sound is in, and on, the air.

Solution of the two major problems of synchronization of sound made possible the success of talking pictures.

The first problem was to record sounds completely and accurately, and then to reproduce those sounds just as completely and just as accurately. The discovery of the relationship between sound impedances and electric impedances offered the solution to the first problem. The radio and the orthophonic Victrola had already made possible the complete and accurate recording and transmission of voices with the picture.

The second problem was to reproduce the recorded sounds with such volume as to make them heard in all parts of a theatre auditorium. Vacuum tubes pick up the sound and amplify it and loud speakers take it to every section of the theatre. The addition of pictures, in synchronization, perfected the talking picture.

Transmission of sound was first solved for improved long-distance telephone service. Vacuum tube amplifiers were evolved for the purpose of stepping-up the voice or its electrical impulse at regular intervals. Then came the loud-speaker, which throws the voice hundreds of feet from the transmitter. With the transmission accounted for, the only remaining step was the complete and accurate recording of sound. Studies along such lines quickly provided the solution to the problem. It was found that in making phonograph records directly from the performer through a megaphone to a diaphragm stylus and wax disc, all the sound frequencies were not included. What was needed was a more sensitive


MOVIETONE CAMERA THAT TAKES A PICTURE OF SOUND
1 CAMERA AND MICROPHONE SIMULTANEOUSLY COVER SOUNDS AND ACTIONS
2 SOUND WAVES FROM PERFORMERS ENTER SENSITIVE MICROPHONE AND ARE CHANGED INTO CORRESPONDING ELECTRICAL VIBRATIONS
3 THE ELECTRIC CURRENT, NOW CARRYING THE TRANSFORMED SOUND WAVES FROM THE MICROPHONE FLOWS THROUGH WIRES TO THE AMPLIFIER WHERE ITS INTENSITY IS INCREASED OVER 1,000,000 TIMES BY THE POWERFUL VACUUM TUBES
POWER AMPLIFIER
4 THE SOUND CARRYING CURRENT NOW FLOWS THRU WIRES TO THE CAMERA WHICH CONTAINS THE WONDER "ALTA" LIGHT TUBE
5 THE CURRENT ENTERS THE "ALTA" LIGHT TUBE, A RECENTLY PERFECTED INVENTION, MARVELOUSLY SENSITIVE TO THE SLIGHTEST VARIATION OF ELECTRIC IMPULSE THE FLUCTUATIONS OF THE CARRIED WAVE CAUSE THE LIGHT TO FLARE AND DIM CORRESPONDINGLY AND THIS FLUCTUATING LIGHT STRIKES UPON THE PHOTOGRAPHIC FILM THROUGH A TINY SLOT (SEE 6 ABOVE) THE RESULT IS A NARROW BAND OF MICROSCOPIC LINES OF VARYING DENSITIES PRINTED UPON THE EDGE OF THE FILM, ALONGSIDE THE PICTURES OF THE PERFORMERS WHOSE VOICES AND MOVEMENTS ARE BEING RECORDED
A SIMPLIFIED SECTIONAL VIEW A - FILM AS IT PASSES THRU THE CAMERA. B - "ALTA" LIGHT TUBE. C - SLOT THRU' WHICH LIGHT STRIKES ON FILM.
BELOW IS REPRESENTED A BIT OF THE FINISHED PRODUCT SHOWING ACTION AND SOUND PHOTOGRAPHED ON THE SAME STRIP OF FILM. EVERY MOVEMENT IS ACCOMPANIED ON THE FILM BY THE SOUNDS APPROPRIATE TO THAT MOVEMENT. THIS DUAL RECORD IS PERMANENT, INSEPARABLE.
8 BY A REVERSAL OF THE ABOVE OUTLINED PROCESS, THE MICROSCOPIC LINES ARE CONVERTED INTO SOUND WAVES AND PROJECTED THROUGH A LOUD SPEAKER SIMULTANEOUSLY WITH THE PICTURE SHOWN UPON THE SCREEN. REPRODUCTION IS ABSOLUTELY AND AUTOMATICALLY SYNCHRONOUS
This is what you hear!
This is what you see on the screen.
Sprocket holes, to hold film in place in projection machine.
RCA PHOTOPHONE SOUND-ON-FILM RECORDING

Upper—How Movietone Operates. This is the Fox-Case method.
Lower—The film as used in RCA Photophone productions.

system; and that was what the experimenters found. Their plan was to have the performer sing or speak into a microphone as in radio and to have the electric energy, motivated by the sound waves, move the stylus against the wax disc. Thus was accurate recording made possible.

There are two distinctive methods of recording sound. One is the disc method, the other is the sound-on-film. The first is not unlike recording for phonographs. In the latter case, the sound record is photographed on the film itself. Theatre equipment is available which can be used with either of the methods or with both. The only difference lies in the "pick-up" apparatus used at the projector. The amplifiers and horns are identical, and productions of both sorts can be used on the same program, a simple switching operation permitting immediate change from one method to the other.

Both recordings are electrically done. The voice or music is picked up by a microphone which generates a small electric current whose variations correspond to the sound waves. In disc recording, this current controls an electric-magnetic recording-stylus whose movements cut the record on a wax disc in the usual manner, with undulations of the groove corresponding to the sound waves. In sound-on-film recording, the amount of light falling on the moving film is made to vary in accordance with the fluctuations of the microphone current and so a photographic record corresponding to these fluctuations—and, therefore, to the voice or music—becomes impressed on the film. The disc records are similar to the best types of phonograph records except that they are much larger and run at about half standard speed. This enables each record to play throughout a whole reel. The film used is the same as the ordinary film except that one frame at the beginning is marked in order to denote the starting point.

With the film method, the sound record consists of a band about one-eighth of an inch wide called the "sound track" running down one side of the film. It is made of microscopic lines and in the case of the Movietone, the spacing of these lines depends on the pitch of sound which was recorded at that moment. The difference of intensity of the lines depends on the loudness of the sound—that is, the greater the contrast between the light and dark lines, the louder the sound. An ordinary beam of light from a high intensity lamp is focused on the sound track through a system of lenses and an aperture plate. The light which passes through the moving film will vary in intensity according to the variations of the lines recording in the sound track. This light falls on a photo-electric cell which produces a small electric current whose variations correspond to the light and, therefore, to the sound which was recorded. The Photophone arrangement differs in that the lines are long and short, rather than light and dense. They resemble nothing so much as a hair comb with some of the teeth broken. In the industry it is spoken of as a hill and dale arrangement.

The current from the amplifiers is converted into sound by means of sound projectors consisting of receivers and horns located at the screen. The number of horns and their size depends upon the size and acoustic properties of the theatre. The horns are placed directly behind the screen so that a perfect illusion that the voice and the music are coming from the screen may be obtained in all parts of the theatre.

The Future Industry

Chapter VII

The immediate effect of sound has been to increase attendance at motion picture theatres by millions. Vast new audiences have been reached and these will be held as the development continues and as talking pictures become better and better. With the same familiarity with which the public receive motion pictures under its own affectionate name of "movies," the public has accepted talking pictures under the name of "talkies."

At first there was a wide variance of opinion as to the future of sound. Many men in the industry believed that sound would not last. It took public response to convince many of them that sound was here to stay. It is but fair to say of them that when they were convinced, they did not hesitate to reverse their opinions.

Sound, of course, has wrought great changes in the technique of motion picture production. Nowhere has this change been so noticeable as in the methods of direction and of scenario writing. Incidentally, of course, great new fields of dramatic material were opened up for the screen. Plays and stories which had depended largely on dialogue or on their psychological development for success became usable for the first time. The writing of natural speech became imperative. To the everlasting credit of the screen writers, let it be said that they are speedily mastering the new technique. The pictures today offer an outstanding example of the effective use of simple and telling dialogue.

An early fear that sound would end the careers of many well-known actors who had been developed for the screen without previous stage experience has been to a large extent dissipated by time. The public still seems to prefer its screen stars, with the result that not many screen players have been discarded. They have simply had their ranks added to by attractive personalities imported from the speaking stage. If an actor cannot speak lines with ordinary ability or suffers from vocal impediments, of course he loses his value. Several foreign stars, who could not speak English and who declined to devote sufficient time to mastery of the language, were unneeded when talking became a necessary addition to the film.

The public has always been drawn to motion pictures by the personalities of the players as much as by the stories and I do not believe that the public will ever materially change its habits. And isn't it true, as a matter of fact, that even the stage depends very little upon voices? Very few producers demand perfect diction. The stage and the screen depend largely on types, and this is especially true of motion pictures because the screen is now and always has been the exponent of realism. It places characters in human situations and moves them through scenes peopled by ordinary figures of the world. Without meaning any disparagement of the stage, I still say that it does not approach the motion pictures in naturalness.

Many stage voices are unnatural when transferred to a record. Actors have the habit of declaiming their lines. They speak to the tenth row, or to the gallery. In front of the microphone, the slightest whisper is audible. One's natural conversational voice is preferable. And motion picture actors have the ability to hold their own in natural speech.

Of course, many important actors and actresses who have

achieved distinction on the legitimate stage have met with success in talking pictures. They will continue to find success and the industry will always welcome trained talent, for its purpose is to produce pictures which are entertaining and dramatic and artistic, and those who are best qualified to appear in such pictures will always be selected.

In the last few months much has been learned about the possibilities of sound. Every new picture has marked an advance. Directors are learning how to save all the advantages of the silent picture while they are adding the qualities of sound. Their progress has been little short of dazzling. They have been forced to deal with a new instrument. They have had to master a new technique.

At first we thought it necessary to have absolutely soundproof studios. Today we make sound pictures outdoors. We have made mistakes but we are getting rapidly away from the early errors. Every new picture marks a really great advance.

Today sound is new. Tomorrow there will be something else—the enlarged screen, the third dimension.

I do not think I am too visionary when I predict for tomorrow a motion picture flashed on the screen as large as the ordinary stage, the figures moving in perspective, speaking naturally, all in the vivid colors of life. That day, in fact, is just around the corner.

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